Programmable Thermostat

For Electric Baseboard Heaters

UPM

ENERGY STAR

High VOLTAGE
120 V/ 240 V AC, 60 Hz

Model No.
HTM621

Features:

- Ideal for electric baseboards, fan assisted (convectors) and radiant ceiling heating
- 7-day programming with 4 programs per day
- Copy one day's program to another day
- Temperature display and programming in Celsius or Fahrenheit
- Precise temperature control, set in half degrees
- Temperature override prevents other users from increasing temperature, in order to better manage heating costs
- Selectable cycle rates for energy-efficient heating, precise heating (Variance ± 0.6 °F [0.3 °C])
- TRIAC system (Quiet operation)
- Usage monitor tracks accumulated heating "ON" time
- 12- or 24-hour hour clock display
- Simple two-wire installation
- LCD backlight

SPECIFICATIONS

Rating:	**120 V/240 V AC, 60 Hz**
Max. load:	**16.6 A**
	4000 W @ 240 V or
	2000 W @ 120 V
Min. load:	**500 W @ 240 V**

Hardware included:
- 2 Screws
- 2 Wire Nuts

*** NOT FOR USE WITH LOW VOLTAGE (24 V) CENTRAL HEATING & AIR CONDITIONNING SYSTEMS & WALL MOUNTED FURNACES.**

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Installation instructions

Introduction

This thermostat is for use with high voltage systems (120 V/240 V) such as electric baseboards, radiant ceiling/floor heaters and convectors ONLY. The unit is rated for ***high-voltage*** wiring only (120 V / 240 V). The minimum load requirement is 500 W. NOT for use with low voltage (24 V) central heating & air conditioning systems & wall-mounted furnaces.

Warning

THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, AND IN QUEBEC, BY A QUALIFIED ELECTRICIAN. The manufacturer assumes no responsibility for damages caused by improper wiring. Improper installation automatically voids the warranty.

COMPATIBILITY

Generally, equipment with **high-voltage** control is only compatible with the electric baseboards, convectors or radiant heating systems.

HEATING SYSTEMS	COMPATIBILITY
Central Heating Furnace System(24 V)	**No**
Electric Radiant Floor Heater	**No**
Heat Pump	**No**
Electric Baseboard Heater (120V/240 V)	**Yes**
Fan Assisted (Convectors)	**Yes**
Electric Radiant Ceiling Heater	**Yes**

Warning

DO NOT WIRE TO A SYSTEM EXCEEDING 16.6 A (4000 W @ 240 V, 2000 W @ 120 V)

Choosing a location

Thermostat should be mounted:

- on the existing metal electrical box that controls your heater.

Note: Ensure that the thermostat is not near heat sensitive / flammable material such as exposed wood or wallpaper. The normal surface temperature of the thermostat is 113° to 122°F (45° to 50°C) while in operation. The thermostat is rated to operate safely at these temperatures, but should be kept away from fire hazards.

For NEW home installation, the metal electrical box and thermostat should NOT be mounted:

- near temperature-radiating objects that may cause false readings
  (For example: in front of a window, next to a door leading outside, or near the heat from a lamp, direct sunlight, or a fireplace)
- near concealed pipes and chimneys.
- in areas with poor air circulation, such as behind a door or in an alcove.

INSTALLATION

THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, AND IN QUEBEC, BY A QUALIFIED ELECTRICIAN.
The manufacturer assumes no responsibility for damages caused by improper wiring.
Improper installation automatically voids the warranty.

Before installation:

- Verify that the heating appliance that is being connected is within the specified load range.
- Ensure that the new thermostat is rated for 120 V / 240 V.
- Ensure that the heating system is protected by appropriate circuit breakers or fuses.
- Connect to COPPER conductors only.

TO AVOID FIRE, SHOCK, OR DEATH, SHUT OFF POWER SUPPLY AT THE CIRCUIT BREAKER OR FUSE, AND TEST THAT THE POWER IS OFF BEFORE WIRING.

INSTALLATION

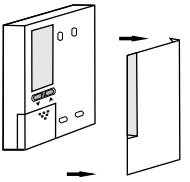
1. Remove the old thermostat carefully, and identify the two wires from the wall box.

2. Gently remove the faceplate from the right side of the new thermostat, but DO NOT remove the screws from the back of the unit, because these screws hold the thermostat together.

3. Using the wire nuts provided, securely fasten each wire from the new thermostat to the live wires in the wall box. Refer to the diagram.
   NOTE: ENSURE THAT NO BARE WIRE IS EXPOSED.
   *Note: If there are 4 wires connected to the old thermostat, the 2 extra wires should be connected together using a wire nut (not supplied).

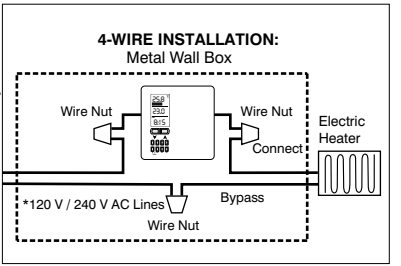
4. Mount the thermostat to the wall box using two screws through the mounting holes, and then replace the faceplate. (Place screws in the 2 right or 2 left holes.)

5. Reconnect power supply.



** Remove Faceplate*

To remove the faceplate, gently pull the right side of the thermostat. The faceplate should come off easily.



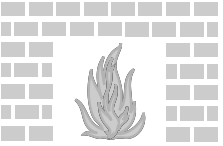
RESET

If you have successfully installed the thermostat, but the LCD screen does not display or the display seems abnormal, press the RESET button. (The reset button must be pressed in gently using a small blunt object.)This will revert the clock to 9:00 a.m. Monday morning.

NOTE: To restore programs and options to factory defaults, see page 18.

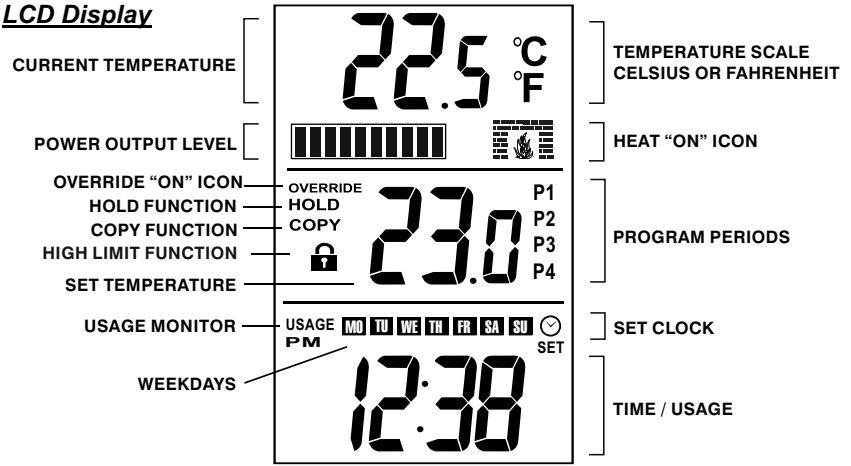
BACKLIGHT

This unit comes equipped with a backlight that will light up the screen for a few seconds any time a button is pressed. The backlight might not come on if there is ample light in room, or just after installation or an extended power outage. Following a period without power, the thermostat will use power to recharge a back-up battery. Once this battery is recharged, the backlight will work again.



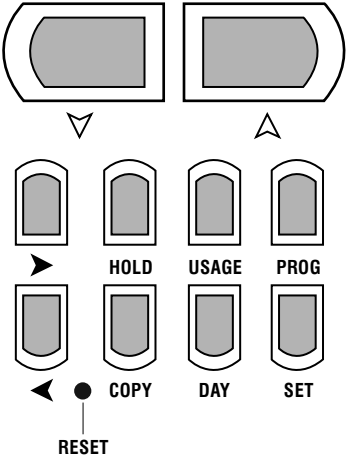
Programming

LCD Display

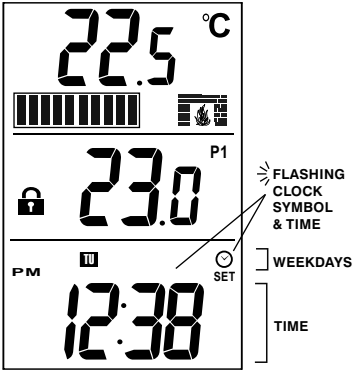

CURRENT TEMPERATURE
22.5
°C
°F
TEMPERATURE SCALE
CELSIUS OR FAHRENHEIT
POWER OUTPUT LEVEL
HEAT "ON" ICON
OVERRIDE "ON" ICON
OVERRIDE
HOLD FUNCTION
HOLD
COPY FUNCTION
COPY
HIGH LIMIT FUNCTION
SET TEMPERATURE
23.0
P1
P2
P3
P4
PROGRAM PERIODS
USAGE MONITOR
USAGE
PM
MO TU WE TH FR SA SU
SET
SET CLOCK
WEEKDAYS
12:38
TIME / USAGE

Buttons

USAGE
Displays the total time spent heating per day or week.
COPY
Copies program settings from one weekday to another.
HOLD
Suspends automatic programs(manual mode)
PROG
To enter program mode and scroll settings.
UP ⩚ / **DOWN** ⩛
Changes target temperature.
RESET
Resets program /clock to factory defaults. (See page 8.)
DAY
Changes day of the week when viewing programs or setting the clock.
SET
Enters the clock setting mode. Press for 3 seconds to access optional settings.
AHEAD ➤ / **BACK** ➤
Moves time ahead or back in clock and program mode.



SET CLOCK



Choose 12- or 24-hour hour clock

Note: 12-hour mode is the default.

❶ Press and hold SET for 3 seconds to enter the option setting mode. (12Hr or 24Hr will flash on the bottom pane of the LCD screen)
❷ Press UP or DOWN to toggle between12- and 24-hour display.
❸ Wait 15 seconds for normal display to return.

Set Clock / Weekday

❶ Press SET to enter the clock-setting mode. (SET will display and the clock symbol/time flashes)
❷ Press the AHEAD or BACK button to scroll to the correct time of day, hold the button to accelerate.
❸ Press DAY repeatedly to change the day of the week.(Weekday symbols will flash)
❹ Press SET to end the time mode, or wait 15 seconds for normal display to return.

CELSIUS DEFAULT: Since Celsius (°C) is the default mode, no action is required to use the thermostat in this mode.

(°C or °F)*If you wish to use Fahrenheit* It is VERY IMPORTANT that you choose Fahrenheit (°F) before you begin using the thermostat. If you proceed to program the thermostat with the default Celsius (°C), and THEN change to the Fahrenheit (°F) setting; all programs set by the user will be deleted.

Select °C or °F (Celsius or Fahrenheit)

❶ Press SET for 3 seconds to enter the option setting mode.
❷ Press SET 3 times (until the temperature and °F / °C begins flashing)
❸ Press UP or DOWN to toggle between the °F / °C setting.
❹ Wait 15 seconds for normal display to return.
(See Option section for more details)

Program Heating

This thermostat is equipped with 7-DAY PROGRAMMING. Monday + Tuesday + Wednesday + Thursday + Friday + Saturday + Sunday programming, with 4 settings per day. This thermostat is pre-programmed for your convenience, or you can set your own programs as desired. The program periods (P1,P2, P3, P4) allow you to set the temperature settings and start times throughout the day.

P1: MORNING This is typically the morning hours, when you may prefer to wake up to a warmer temperature.

P2: DAY This is usually an energy-savings period, for the time when you are away from home. The temperature setting can be reduced to minimize energy consumption. If you are not away from home on a particular day, you may override this setting by manually adjusting the temperature buttons.

P3: EVENING This is the period when you typically return home, and would like the house at a comfortable temperature. Generally, the temperature is set to warmer settings during the winter and cooler settings during the summer. If you do not often leave the house during the day, period 1, 2 or 3 can be set at the same temperature for comfort.

P4: NIGHT This is the period when you would typically be asleep. You may choose to set the temperature for energy savings or comfort, as desired.

Set Program

The program periods (P1,P2, P3, P4) allow you to set the temperature settings and start times throughout the day. These are examples of possible temperature settings, the first being the factory default setting, and the second a custom setting.

1) DEFAULT / PRE-PROGRAMMED TIME AND TEMPERATURE SETTINGS

	PERIOD	P	TIME	HEAT SET POINT
P1	MORNING	P1	6:00 a.m.	69.0 °F (20.5 °C)
P2	DAY	P2	8:00 a.m.	63.5 °F (17.5 °C)
P3	EVENING	P3	5:00 p.m.	70.0 °F (21.0 °C)
P4	NIGHT	P4	10:00 p.m.	62.5 °F (17.0 °C)

Example 1
This setting is a default, and will activate automatically. Convenient for people who are away from home during the day and who wish maximize energy savings.

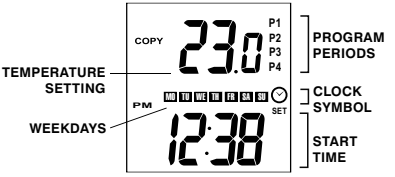
2) CUSTOM / PRE-PROGRAMMED TIME AND TEMPERATURE SETTINGS

	PERIOD	P	TIME	HEAT SET POINT
P1	MORNING	P1	7:00 a.m.	69.0 °F (20.5 °C)
P2	DAY	P2	8:00 a.m.	69.0 °F (20.5 °C)
P3	EVENING	P3	5:00 p.m.	69.0 °F (20.5 °C)
P4	NIGHT	P4	11:00 p.m.	62.5 °F (17.0 °C)

Example 2
This is a custom program set by the user. Convenient for people who are at home during the day and want the home warm all day, but want a cooler temperature at night.

Set Program

First select the day you wish to program, then select the start times and temperature settings for all four program periods. Scroll through the daily Program Periods in this order: P1, P2, P3, P4. You may select any weekday to begin programming:



❶ Press PROG to enter program mode.
❷ Press DAY to change weekday being programmed. (Period 1 (P1) will appear.)
❸ Press UP or DOWN to set the temperature for P1.
❹ Press AHEAD or BACK to set the start time for P1.
❺ Press PROG again to adjust the next Program Periods (P2, P3, P4) and to exit program mode
❻ Repeat the above steps above until all four programs are adjusted to your needs. Then you can program the rest of the week by programming each day individually, or by using the COPY function.

Note:
- If the High-Limit function is activated, the user can't set the temperature over this limit.

COPY FUNCTION - When temperature override is activated, other users cannot increase the temperature.

Copy Program Function

This thermostat can copy program period settings from one day to another using the COPY function. All four period settings (P1, P2, P3,P4) will be copied. This is faster than programming each day one at a time.

If you are not already in program mode, press PROG to enter program setting mode.

❶ Press DAY to select the weekday you wish to COPY FROM.
❷ Press COPY. The COPY symbol will be displayed, and the next weekday will flash, indicating the weekday being COPIED TO.
❸ Press DAY to select the day you wish the programs COPIED TO.
❹ Press COPY again to copy all four program settings from the first day to the flashing day. The COPY symbol will disappear to indicate the COPY function is complete.

Note: To copy the program to another day, press copy again, and repeat.
For example: If you press COPY 12 times consecutively, the selected program will be copied to the entire week.

HIGH-LIMIT FUNCTION

The maximum programmable temperature will be the high-limit setting if it has been selected. If it is set after programming, any higher temperatures will be reduced to the high-limit.

If you have difficulty programming your thermostat, you may wish to restore the factory settings and begin again.

RESTORE PROGRAMS AND OPTIONS

❶ Press SET for 3 seconds to enter the Options mode.
❷ Press PROG for 3 seconds to restore all programs to factory defaults.
Note: This will restore the default programs and the option settings, but will not affect the clock. To reset the clock, press RESET (see page 8 for more details).

Temperature Override

This function will allow you to change the temperature setting until the start time of next program period.

❶ Press the UP or DOWN button to manually adjust to the desired temperature setting.

NOTE:

- The temperature can be set in increments of 0.5 °C or 0.5 °F .
- The temperature setting range is from 41° to 95 °F (5° to 35 °C).
- Press and hold the UP or DOWN button down to accelerate the setting.
- The thermostat will automatically return to the regular program at the next scheduled program period.
- If the High-Limit function is activated, the user can't set the temperature over this limit.

HOLD Function

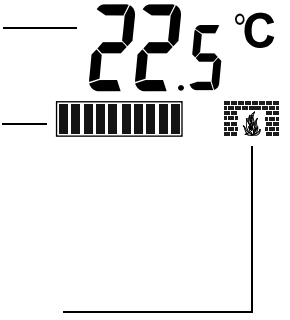
This function maintains a constant temperature, and disables temperature program periods.

❶ Press the HOLD button once to enter the HOLD mode. (HOLD symbol will appear)
(*When HOLD is activated, you may manually adjust the temperature by pressing UP or DOWN. However, all programs will be disabled. If no temperature changes are manually selected, the current temperature setting will remain the same indefinitely)

❷ To CANCEL the HOLD function, press the HOLD button again. The HOLD symbol will disappear.

OPERATION

Current Temperature Display
The current (room) temperature is displayed on the LCD screen.



Power Bar
This thermostat is equipped with a proportional regulation system to determine the precise amount of power required by the electric heater to maintain the temperature setting.

The “Power Bar” indicate the current output power level.
1 BAR = 10%, 10 BARS = 100%
When the heating system is activated at partial power, a proportional number of bars will appear (e.g. 60% = 6 bars). When the heating system is activated at maximum power, all 10 bars will display.

Fireplace Symbol
The fireplace symbol will flash when the heating system is ON (actively heating).

Usage Monitor

The thermostat tracks the system "ON" time; the total time the heating equipment is running.
Press the USAGE button once to view USAGE TODAY.
Press the USAGE button again to view the USAGE THIS WEEK (total time from Monday to current day);
- *USAGE TODAY starts at midnight.*
- *USAGE THIS WEEK automatically resets itself on Monday morning, after midnight on Sunday.*
- *A new week begins Monday morning.*

Memory Backup

The memory backup will save and protect programs and option settings indefinitely. If an extended power outage occurs, only the clock setting may be affected. The clock will continue to run and display on the LCD screen for up to 1-2 days even without power, due to the rechargeable back-up battery inside the unit. However, if the power outage is longer than 2 days, the clock will need to be reset.
(The unit will reset itself to a 9:00 a.m. default).

Thermostat Surface Temperature

In normal operation, the thermostat may range in temperature from 113° to 131°F (45° to 55 °C).
This is perfectly normal, because this thermostat is rated to operate safely at these temperatures.
However, it is recommended that the thermostat not be installed near heat sensitive / flammable material such as exposed wood, wallpaper or other fire hazards.

OPTION SETTINGS

This thermostat has 4 OPTION settings that the user can change.
The OPTION data will appear in the lower pane of the LCD screen.

OPTION 1 - 12- or 24-Hour Clock Format

❶ Press and hold SET for 3 seconds to enter the Option Setting mode.
The first option is 12- or 24-hour clock format. (**12:Hr** will be flashing)
❷ Press UP or DOWN to toggle between 12- or 24-hour format.

OPTION 2 - Heat Cycle Rate

❶ Press SET again to advance to the second option (Cycle rate. **Cr:1** will flash)
❷ Press UP or DOWN button to adjust setting (see cycle rate definition on following pages)
Cr0 = Full Power, No Cycle (for fan-assisted heating devices)
Cr1 = 20 Sec. Proportional Power (for non-fan-assisted baseboards and electric heating devices)
Cr2 = 240 Sec. Proportional Power (for convectors and radiant ceiling)

OPTION 3 - Pre-Comfort Recovery

❶ Press SET again to select pre-comfort recovery. (**rE:1** will flash on screen)
❷ Press UP or DOWN to adjust setting (see pre-comfort recovery definition on following pages)
rE:0 means pre-comfort recovery feature is disabled
rE:1 means pre-comfort recovery feature is enabled

OPTION 4 - °C or °F Display

❶ Press SET again to select Celsius or Fahrenheit scale (the current temperature will flash)
❷ Press UP or DOWN to toggle between the °C or °F temperature scales.

Note: (°C or °F) It is VERY IMPORTANT that you choose Fahrenheit (°F) before you begin using the thermostat. If you proceed to program the thermostat with the default Celsius (°C) and THEN change to the Fahrenheit (°F) setting; all programs set by the user will be deleted. If you change from Celsius (°C) to Fahrenheit (°F) or vice versa, all programs will be reset to the factory defaults.

Pre-comfort Recovery

This thermostat is equipped with a 'Pre-comfort Recovery' system that will activate the heating system in advance of the actual set program time so that the room will be at the desired temperature at the start of the program time.

It is normal for the system to be activated earlier than the actual set program time (up to one hour). The Pre-comfort Recovery can be disabled if desired. If pre-comfort recovery is turned off (rE:0), heating will only be initiated at the exact start time the program period.

Heat Cycle Rate

Cycle rate determines the heating on/off time cycles and the level of proportional power required to operate the heater. (To have the heater operate at full power all the time, select Cr 0 to disable heat cycling.) The cycle rate is based on the type of heating system and the power load required to operate the device. The higher the load (size of baseboard or radiant heater), the greater the heat generated.

Cr 0 is continuous operation (no cycling), with a variance of +/- 0.6 °F (+/-0.3 °C). The heating unit will operate at full power and the arrow bar icon will appear full. This function is for users who do not want their electric heating devices to turn on and off frequently.

Cr 1 is a 20-second cycle rate with proportional heating. This means the heating will be turned on and off once every 20 seconds to provide a stable room temperature. This cycle rate allows a proportion level of power to the heating device. This is indicated on the thermostat display by the bar icon, which will be partially filled, indicating the amount of power going to the heater. This setting is recommended for standard electric heating devices, without fans, and will provide the most energy-efficient heating and a stable temperature.

Cr 2 is a 240-second span. This means the heating will be turned on and off once every 240 seconds. This is the recommended setting for fan-assisted heaters and radiant ceilings.

Setting the HIGH-LIMIT FUNCTION

To enable this feature and set a maximum temperature, first press the "UP" or "DOWN" key until the desired high limit temperature is shown in the program temperature pane. Press the “USAGE” and “COPY” keys for 3 seconds to activate the function. A LOCK symbol will be shown.

All existing programs will be scanned, and if the existing temperature setting is above the new maximum set point, it will be reduced to the high-limit set point. The High-limit setting can not be bypassed by programs, temporary overrides or the HOLD function.

To deactivate the function, turn the unit off for at least 30 seconds, and then turn it on. The LOCK symbol will blink for 5 minutes. While the LOCK symbol is blinking, the deactivation process can be carried out by pressing “USAGE” and “COPY” keys for 3 seconds. The LOCK symbol will disappear upon deactivation.

Specifications:

Number of programs: 7-Day with 4 settings per day
Temperature display range: -9.9°C - 70°C (14°F - 158°F)
Temperature setting range: 5°C to 35° C (41°F to 95° F)

SPECIFICATIONS
Rating: 120 V/240 V AC, 60 Hz
Max. load: 16.6 A
4000 W @ 240 V or
2000 W @ 120 V
Min. load: 500 W @ 240 V

TROUBLESHOOTING GUIDE

PROBLEM	SOLUTION
LCD screen is blank or abnormal.	- Check if the circuit breaker is open. - Check if there has been a power failure. - Check that the thermostat is wired to a 500 W or greater circuit. - Check the wiring installation with a certified electrician. - Press the RESET button under the faceplate (see page 8).
Programming Issues: Heating is not activated at the programmed times.	- Review the programming guide to ensure the programs have been entered correctly. - Check that the clock has been set to the correct time. (e.g.: a.m./p.m. reversed) - Check if there has been a power failure. - PROGRAM RESET: Press SET for 3 seconds to enter the option mode, then press PROG for 3 seconds to clear programs settings only. - RESET ALL: Press and hold the HOLD and the RESET button at the same time to restore all settings to factory default (see page 8).

PROBLEM	SOLUTION
The heating system will not activate.	- Check the thermostat LCD display to see if there has been a power failure. - If a lock appears on the LCD when you raise the temperature, the “HIGH-LIMIT FUNCTION” is activated. - Check heating device to see if it is disabled or if the circuit breaker is open. - Check the wiring installation with a certified electrician.
The heating system is running constantly.	- Check the temperature is not set too high. - Check the wiring installation with a certified electrician.
The temperature display is incorrect.	- Ensure thermostat is not installed near a draft, in direct sunlight or near any devices such are air conditioners or heaters.
Heating system seems to cycle too often.	Check and ensure that you have selected a Cycle Rate that matches your particular heating system.
The thermostat feels HOT to the touch.	- In normal operation, the thermostat may range in temperature from 113° to 131°F (45° to 55 °C) This is perfectly normal, because this thermostat is rated to operate safely at these temperatures. However, it is recommended that the thermostat not be installed near heat sensitive / flammable material such as exposed wood, wallpaper or other fire hazards.

Limited 5-year Repair Warranty

This product carries a five (5) year warranty against defects in workmanship and materials.
This product is not guaranteed against wear or breakage due to misuse and/or abuse.

If the product is defective,
(i) return it, with a dated proof of purchase, to the retailer from which you purchased it.

Attention:
THIS PRODUCT MUST BE INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, AND IN QUEBEC, BY A QUALIFIED ELECTRICIAN. The manufacturer assumes no responsibility for damages caused by improper wiring. Improper installation automatically voids the warranty.

Toll-free Helpline:
1-888-468-6876

*** NOT FOR USE WITH LOW VOLTAGE (24 V) CENTRAL HEATING & AIR CONDITIONNING SYSTEMS & WALL MOUNTED FURNACES.**